



Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

Tel (613) 632-5200  
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SWA3-2

Job Sheet 201323



*Permutation*

Part No: SWA3-2

Job Qty: 1 pcs

Part Name: Electric Swivel 3,000 lb Safe Work Load (1,360 Kg)



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 10/1/19

Job Tracking No:

Due Date: 11/1/19

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: DWG SWA3 Rev 3 IPP Rev A 18.04.06 DP verified DD

Ship Via:

## Bill of Materials

## Job Routing

| Op No | Operation                   | Qty   | Start Date | Due Date | Standard  |         | Workcenter/Supplier     |           | Sign-off      |
|-------|-----------------------------|-------|------------|----------|-----------|---------|-------------------------|-----------|---------------|
|       |                             |       |            |          | Setup Hrs | Run Hrs | Workcenter / Supplier   | Lead Time |               |
| 90    | External Load - Issue SN    | 1 pcs | 11/1/19    |          | 0.00      | 0.00    | External Load - 1       |           | AP            |
|       |                             |       |            |          |           |         | External Load - 2       |           |               |
|       |                             |       |            |          |           |         | External Load - 3       |           |               |
| 110   | External Load - 2 - B4B     | 1 pcs | 11/1/19    |          | 0.00      | 2.00    | External Load - 1 - B4B |           | AP 2019/10/08 |
|       |                             |       |            |          |           |         | External Load - 2 - B4B |           |               |
|       |                             |       |            |          |           |         | External Load - 3 - B4B |           |               |
| 120   | QC 5                        | 1 pcs | 11/1/19    |          | 0.00      | 0.00    | QC 5 - 10               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 12               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 17               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 18               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 19               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 22               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 24               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 3                |           |               |
|       |                             |       |            |          |           |         | QC 5 - 43               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 49               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 51               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 58               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 68               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 9                |           |               |
|       |                             |       |            |          |           |         | QC 5 - 50               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 30               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 40               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 61               |           |               |
|       |                             |       |            |          |           |         | QC 5 - 81               |           |               |
| 130   | Packaging 3-1 - Stock - B4B | 1 pcs | 11/1/19    |          | 0.00      | 0.00    | Packaging 3 - 1 - B4B   |           |               |
|       |                             |       |            |          |           |         | Packaging 3 - 2 - B4B   |           |               |
|       |                             |       |            |          |           |         | Packaging 3 - 3 - B4B   |           |               |
|       |                             |       |            |          |           |         | Packaging 3 - 4 - B4B   |           |               |
|       |                             |       |            |          |           |         | Packaging 3 - 5 - B4B   |           |               |
|       |                             |       |            |          |           |         | Packaging 3 - 6 - B4B   |           |               |



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Container No: S220667



Part: SWA3-2

Job No: 201323

Serial No/Batch: S220667

Revision: 3

DAS  
30  
9-89

OCT 10 2019

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         |                        |                 |                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------|---------|------------------------|-----------------|-----------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 7 - B4B  | DAS             | OCT 10 2019     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 8 - B4B  | 30              |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 9 - B4B  | 9-89            |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 10 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 11 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 12 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 13 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 14 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 15 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 16 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 17 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 18 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 19 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 20 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 21 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 22 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 23 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 24 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 25 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 26 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 27 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 28 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 29 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 30 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 31 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 32 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 33 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 34 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 35 - B4B |                 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         | Packaging 3 - 36 - B4B | DAS             |                 |
| 135                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | DC - 1 - B4B | 1 pcs | 11/1/19 | 0.00 0.00              | DC - 1 - B4B    | 21 OCT 10 2019  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         |                        | DC - 2 - B4B    | 9-89            |
| 140                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | QC 21 - FG   | 1 pcs | 11/1/19 | 0.00 0.00              | QC 21 - FG - 21 |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         |                        | QC 21 - FG - 70 | DAS OCT 10 2019 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |       |         |                        | QC 21 - FG - 53 | 21              |
| Part Op 110 - -Assemble as per DWG. Sheet 1 ***All assembly to be done in accordance with SWA3 swivel manual*** Engrave<br>Descriptions: T/N And / or S/N number as required Using Marktronic engraver as per DWG. Laser engrave dart logo as per DWG.<br>120 - (QC5- Inspect part completeness to step on W/O)<br>130 - (Identify as per dwg & Stock Location: <u>ST 305</u> ) Bag and tag<br>135 - (Document Control) Photocopy blue file OM & OOPM-SWA3A Rev3<br>140 - (QC21- Final Inspection - Work Order Release) |              |       |         |                        |                 |                 |

## Job BOM

| Part / Item       | Component Name                                                 | Quantity      | Operation                   | Container |
|-------------------|----------------------------------------------------------------|---------------|-----------------------------|-----------|
| 188-FPSS-832-3/8  | Set Screw                                                      | 1 Ea (1 ea)   | 90-External Load - Issue SN | 5175966   |
| 188-FSCS-1032-5/8 | Flat socket cap Screw                                          | 4 Ea (4 ea)   | 110-External Load - 2 - B4B | 5216680   |
| EL-PLUG-F         | 3-Prong Female Spade Plug                                      | 1 Ea (1 ea)   | 110-External Load - 2 - B4B | 5163923   |
| EL-PLUG-M         | 3-Prong Male Spade Plug                                        | 1 Ea (1 ea)   | 110-External Load - 2 - B4B | 5216721   |
| EL314-SJTOW       | Long Line Electrical Wire, 14/3 Gauge replace w/t 01004-08-047 | 6 ft (6 ea)   | 110-External Load - 2 - B4B | 5179682   |
| SWA3-100          | Upper End - Swa3 Swivel                                        | 1 pcs (1 ea)  | 110-External Load - 2 - B4B | 5174084   |
| SWA3-200          | Lower End                                                      | 1 pcs (1 ea)  | 110-External Load - 2 - B4B | 5193980   |
| SWA3-300          | Wire Clamp                                                     | 2 pcs (2 ea)  | 110-External Load - 2 - B4B | 5173676   |
| SWA3-400          | Button Head Screw                                              | 2 pcs (2 ea)  | 110-External Load - 2 - B4B | 5191068   |
| SWA3-500          | Connector Bushing-230                                          | 1 pcs (1 ea)  | 110-External Load - 2 - B4B | 5117115   |
| SWA3-600          | O-Ring                                                         | 1 pcs (1 ea)  | 110-External Load - 2 - B4B | 5198668   |
| SWA3-700          | Bearing Balls - 1/4"                                           | 32 Ea (32 ea) | 110-External Load - 2 - B4B | 5201223   |
| SWA6A-1900        | 1/4" Female Spade Connector                                    | 4 Ea (4 ea)   | 110-External Load - 2 - B4B | 5217494   |
| SWA6A-900A        | Rotary Connector - 2 wire                                      | 1 pcs (1 ea)  | 110-External Load - 2 - B4B | 5191044   |

## Job Allocations

| Operation                   | Component Part           | Required | Inventory | Allocated |
|-----------------------------|--------------------------|----------|-----------|-----------|
| 90-External Load - Issue SN | 188-FPSS-832-3/8         | 1        | 94        | 0         |
| 110-External Load - 2 - B4B | 188-FSCS-1032-5/8        | 4        | 124       | 0         |
|                             | EL-PLUG-F                | 1        | 11        | 0         |
|                             | EL-PLUG-M                | 1        | 20        | 0         |
|                             | EL314-SJTOW-01004-08-047 | 6        | 0         | 0         |
|                             | SWA3-100                 | 1        | 7         | 0         |
|                             | SWA3-200                 | 1        | 11        | 0         |
|                             | SWA3-300                 | 2        | 4         | 0         |
|                             | SWA3-400                 | 2        | 20        | 0         |
|                             | SWA3-500                 | 1        | 2         | 0         |
|                             | SWA3-600                 | 1        | 29        | 0         |
|                             | SWA3-700                 | 32       | 77        | 0         |
|                             | SWA6A-1900               | 4        | 116       | 0         |
|                             | SWA6A-900A               | 1        | 8         | 0         |

## Part Specifications

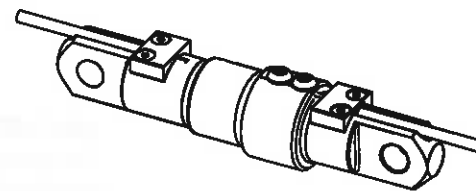
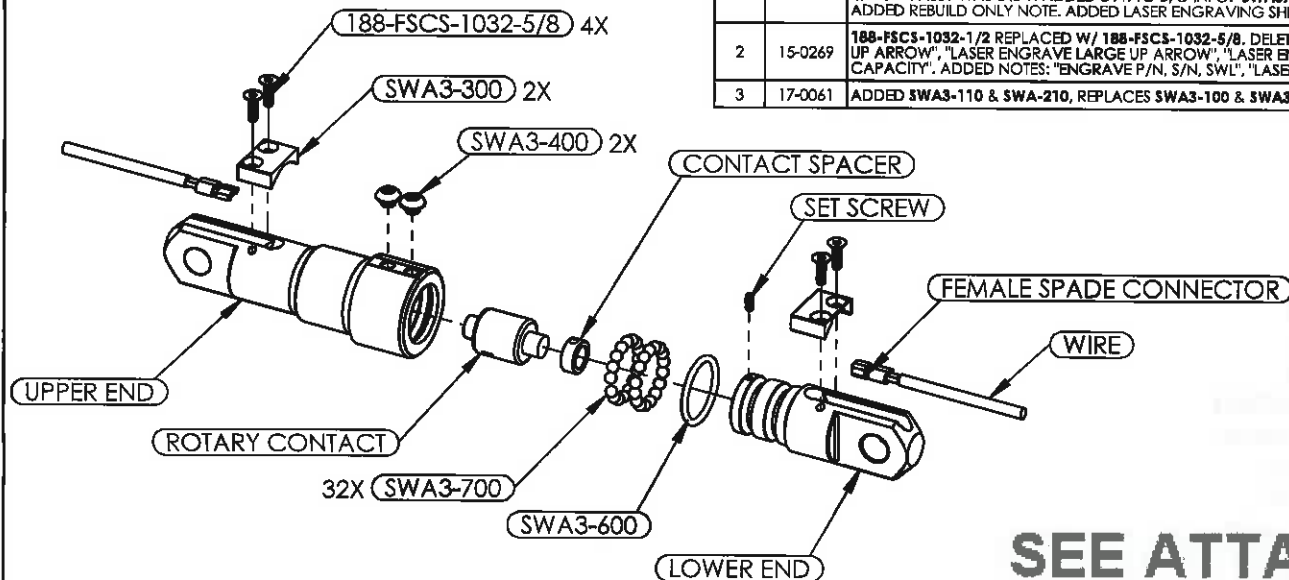
Specifications could not be found.

Plex 10/1/19 10:16 AM Dart.lajeunesse.marie

GREASE AEROSHELL NO: 7 (M138724)  
 SILICONE (S208127)  
 LOCTITE 242 (S186572)

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| REVISIONS |         |                                                                                                                                                                                                                                                                                                                                    |            |         |          |
|-----------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|----------|
| REV       | ECR     | DESCRIPTION                                                                                                                                                                                                                                                                                                                        | DATE       | INITIAL | APPROVED |
| A         |         | REPLACED ID DECAL 600.1318 WITH LASER ETCHING                                                                                                                                                                                                                                                                                      | 11/16/2012 | JAG     |          |
| B         |         | REMOVED 2 WIRE HARNESS                                                                                                                                                                                                                                                                                                             | 8/8/2013   | JAG     | RW       |
| 1         | 15-0079 | UPDATED TO NEW DRAFTING STANDARDS. ADDED SWA6A-2000, 188-FPSS-832-3/8, EL314-SJTOW CHD QTY'S: -2 ASSY WAS 6 IS 1, -3 ASSY WAS 6 IS 1. ADDED 6 FT. TO B/O INFO. EL404-ARTIC CHD QTY'S: -4 ASSY WAS 6 IS 1. ADDED 6 FT. TO B/O INFO. SWA6A-1900 CHD QTY'S: -4 ASSY WAS 8 IS 4. ADDED REBUILD ONLY NOTE. ADDED LASER ENGRAVING SHEET. | 4/16/2015  | DPD     | JAG      |
| 2         | 15-0269 | 188-FSCS-1032-1/2 REPLACED W/ 188-FSCS-1032-5/8. DELETED NOTES: 2X "LASER ENGRAVE SMALL UP ARROW", "LASER ENGRAVE LARGE UP ARROW", "LASER ENGRAVE DART LOGO P/N S/N CAPACITY". ADDED NOTES: "ENGRAVE P/N, S/N, SWL", "LASER ENGRAVE DART LOGO".                                                                                    | 9/23/2015  | DPD     | JAG      |
| 3         | 17-0061 | ADDED SWA3-110 & SWA-210, REPLACES SWA3-100 & SWA3-200 IN -4 ASSY.                                                                                                                                                                                                                                                                 | 3/23/2017  | DPD     | JAG      |



201323 MCT  
1910-01

SEE ATTACHED DEVIATION

| -2 QTY | -3 QTY | -4 QTY | B/O | Part #            | Description                 | Material        | B/O INFORMATION OR SPECIFICATIONS              | PG. |
|--------|--------|--------|-----|-------------------|-----------------------------|-----------------|------------------------------------------------|-----|
| 1      | 1      | -      |     | SWA3-100          | UPPER END                   |                 |                                                | 1   |
| -      | -      | 1      |     | SWA3-110          | UPPER END                   |                 |                                                | 1   |
| 1      | 1      | -      |     | SWA3-200          | LOWER END                   |                 |                                                | 1   |
| -      | -      | 1      |     | SWA3-210          | LOWER END                   |                 |                                                | 1   |
| 2      | 2      | 2      |     | SWA3-300          | WIRE CLAMP                  |                 |                                                | 1   |
| 2      | 2      | 2      |     | SWA3-400          | BUTTON HEAD SCREW           |                 |                                                | 1   |
| 1      | -      | -      |     | SWA3-500          | CONTACT SPACER              |                 |                                                | 1   |
| -      | 1      | 1      |     | SWA3-500B         | CONTACT SPACER              |                 |                                                | 1   |
| 1      | 1      | 1      |     | SWA3-600          | O-RING                      |                 |                                                | 1   |
| 32     | 32     | 32     | B/O | SWA3-700          | BALL BEARING                | S.S.            | Ø1/4 MCMASTER-CARR #9529K15                    | 1   |
| 1      | -      | -      | B/O | SWA6A-900A        | ROTARY CONTACT              |                 | MERCOTAC #230                                  | 1   |
| -      | 1      | -      | B/O | SWA6A-900B        | ROTARY CONTACT              |                 | MERCOTAC #330                                  | 1   |
| -      | -      | 1      | B/O | SWA6A-900C        | ROTARY CONTACT              |                 | MERCOTAC #430                                  | 1   |
| 4      | 4      | 4      | B/O | 188-FSCS-1032-5/8 | FLAT SOCKET CAP SCREW       | S.S.            | 10-32 x 5/8 (MCMASTER-CARR #92210A303)         | 1   |
| 1      | 1      | -      | B/O | EL314-SJTOW       | 3 WIRE                      |                 | 6 FT. (TEXCAN #EL 314-SJTOW 3/14)              | 1   |
| -      | -      | 1      | B/O | EL414-ARTIC       | 4 WIRE                      |                 | 6 FT. (TRUCK & AUTO SUPPLY #EL 414-ARTIC 4/14) | 1   |
| -      | 1      | 1      | B/O | 188-FPSS-832-1/4  | SET SCREW                   | 18-8 S.S.       | 8-32 X 1/4 MCMASTER-CARR #92311A190            | 1   |
| 1      | -      | -      | B/O | 188-FPSS-832-3/8  | SET SCREW                   | S.S.            | 8/32 X 3/8 (MCMASTER-CARR #92311A192)          | 1   |
| 4      | 6      | 4      | B/O | SWA6A-1900        | 1/4" FEMALE SPADE CONNECTOR |                 | (MCMASTER-CARR #69525K16)                      | 1   |
| -      | -      | 4      | B/O | SWA6A-2000        | 1/8" FEMALE SPADE CONNECTOR |                 | (MCMASTER-CARR #69525K14)                      | 1   |
| 1      | 1      | 1      | B/O | 600.1319          | UP DECAL                    |                 |                                                | N/S |
| 1      | 1      | 1      | B/O | EL-PLUG-F         | FEMALE PLUG                 | PE High Density | (MCMASTER-CARR #7216K6)                        | 1   |
| 1      | 1      | 1      | B/O | EL-PLUG-M         | MALE PLUG                   | PE High Density | (MCMASTER-CARR #7216K5)                        | 1   |

NOTES:

1. ALL ASSEMBLY TO BE DONE IN ACCORDANCE WITH SWA3 SWIVEL MANUAL.

2. FOR CUSTOMER REBUILD ONLY.

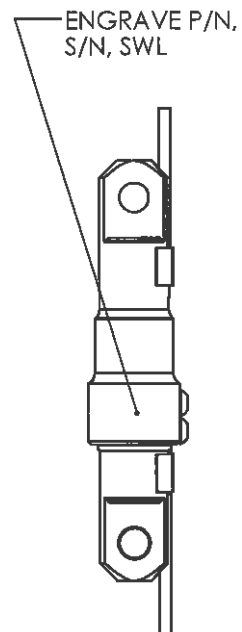
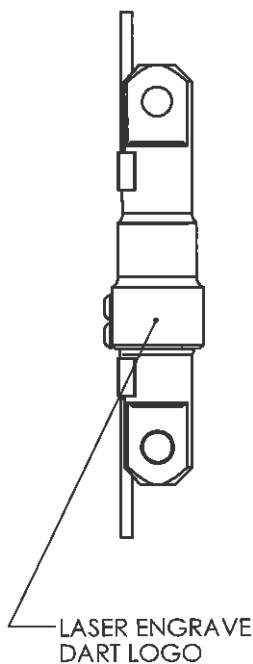
**DART**  
AEROSPACE

SWA3 SWIVEL

|              |                |                                                        |
|--------------|----------------|--------------------------------------------------------|
| TITLE        | SWA3           | REV 3                                                  |
| DWG NO.      | SWA3           |                                                        |
| MAT'L        |                | UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES |
| HEAT TREAT   |                | .XXX ± .006 FRACTIONS ± 1/16                           |
| FINISH       |                | .XX ± .01 ANGLES ± 5°                                  |
| SPEC         |                | .X ± .1 SURFACES = 125/√                               |
| DRAWN BY:    | CANAM          | 1. BREAK ALL SHARP EDGES<br>.015 x 45° OR .015R        |
| CHECKED:     | SM 03/23/2017  | 2. DIMENSIONAL LIMITS APPLY<br>AFTER PLATING           |
| OPPS APPR:   | AA 03/28/2017  | 3. INTERPRET DIM AND TOL PER<br>ASME Y14.5M-2009       |
| QA APPR:     | JL 04/05/2017  | USED ON MODEL                                          |
| APPROVED:    | JAG 04/11/2017 |                                                        |
| SCALE        | 1:4            | DATE                                                   |
| SHEET 1 OF 2 |                |                                                        |

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| REVISIONS |         |                                                                                                                                                                                                |           |         |          |
|-----------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|----------|
| REV       | ECR     | DESCRIPTION                                                                                                                                                                                    | DATE      | INITIAL | APPROVED |
| 1         | 15-0079 | ADDED LASER ENGRAVING SHEET.                                                                                                                                                                   | 4/16/2015 | DPD     | JAG      |
| 2         | 15-0269 | DELETED NOTES: 2X "LASER ENGRAVE SMALL UP ARROW", "LASER ENGRAVE LARGE UP ARROW", "LASER ENGRAVE DART LOGO P/N S/N CAPACITY". ADDED NOTES: "ENGRAVE P/N, S/N, SWL", "LASER ENGRAVE DART LOGO". | 9/23/2015 | DPD     | JAG      |



SEE ATTACHED DEVIATION

|                                         |                                                                                                                                             |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DART<br/>AEROSPACE</b>               |                                                                                                                                             |
| TITLE<br><b>SWA3 SWIVEL</b>             |                                                                                                                                             |
| DWG NO.<br><b>SWA3</b>                  | REV<br><b>3</b>                                                                                                                             |
| MATL<br>HEAT<br>TREAT<br>FINISH<br>SPEC | UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>.XXX ± .005 FRACTIONS ± 1/8<br>.XX ± .01 ANGLES ± .5°<br>.X ± .1 SURFACES = 125/✓ |
| DRAWN BY: CANAM                         | 1. BREAK ALL SHARP EDGES<br>.015 x 45° OR .015R                                                                                             |
| CHECKED: SM 03/23/2017                  | 2. DIMENSIONAL LIMITS APPLY<br>AFTER PLATING                                                                                                |
| OPPS APPR: AA 03/28/2017                | 3. INTERPRET DIM AND TOL PER<br>ASME Y14.5M-2009                                                                                            |
| QA APPR: JL 04/05/2017                  | USED ON MODEL                                                                                                                               |
| APPROVED: JAG 04/11/2017                |                                                                                                                                             |
| SCALE 1:4                               | DATE SHEET 2 OF 2                                                                                                                           |

| P/N      | Revision | Drawing Specified Wire                  | Acceptable Alternate Wire               |
|----------|----------|-----------------------------------------|-----------------------------------------|
| C2       | 2        | MIL-C-27500 11-14416                    | N/A                                     |
| C3       | 2        | MIL-C-27500 11-14417                    | N/A                                     |
| C10      | 3        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| C15      | 2        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| C20      | C        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| C45      | C        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| C60      | C        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| C250     | C        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA3-2   | 3        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA3-3   | 3        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA3-4   | 3        | EL 414-ARTIC 4/14                       | Texcan 01121-744A5                      |
| SWA6A-2  | E        | Texcan 01121-724AM                      | N/A                                     |
| SWA6A-3  | E        | Texcan 01121-734A5 or 01004-08-047      | N/A                                     |
| SWA6A-4  | E        | Texcan 01121-744A5                      | N/A                                     |
| SWA6A-6  | E        | Texcan 04121-764A5                      | N/A                                     |
| SWA6A-8  | E        | Texcan 12701-08-014 or McMaster 7081K38 | N/A                                     |
| SWA10A-2 | 3        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA10A-3 | 3        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA10A-4 | 3        | EL 414 ARTIC 4/14                       | Texcan 01121-744A5                      |
| SWA10A-6 | 3        | EL 616 ARTIC                            | Texcan 04121-764A5                      |
| SWA10A-8 | 3        | Polar Wire 30806                        | Texcan 12701-08-014 or McMaster 7081K38 |
| SWA15A-2 | 1        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA15A-3 | 1        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA15A-4 | 1        | EL 414 ARTIC 4/14                       | Texcan 01121-744A5                      |
| SWA15A-6 | 1        | EL 616 ARTIC                            | Texcan 04121-764A5                      |
| SWA15A-8 | 1        | EL 816 ARTIC                            | Texcan 12701-08-014 or McMaster 7081K38 |
| SAW25A-2 | 1        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SAW25A-3 | 1        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SAW25A-4 | 1        | EL 414 ARTIC 4/14                       | Texcan 01121-744A5                      |
| SAW25A-6 | 1        | EL 616 ARTIC                            | Texcan 04121-764A5                      |
| SAW25A-8 | 1        | EL 816 ARTIC                            | Texcan 12701-08-014 or McMaster 7081K38 |

| P/N      | Revision | Drawing Specified Wire                  | Acceptable Alternate Wire               |
|----------|----------|-----------------------------------------|-----------------------------------------|
| C2       | 2        | MIL-C-27500 11-14416                    | N/A                                     |
| C3       | 2        | MIL-C-27500 11-14417                    | N/A                                     |
| C10      | 3        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| C15      | 2        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| C20      | C        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| C45      | C        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| C60      | C        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| C250     | C        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA3-2   | 3        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA3-3   | 3        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA3-4   | 3        | EL 414-ARTIC 4/14                       | Texcan 01121-744A5                      |
| SWA6A-2  | E        | Texcan 01121-724AM                      | N/A                                     |
| SWA6A-3  | E        | Texcan 01121-734A5 or 01004-08-047      | N/A                                     |
| SWA6A-4  | E        | Texcan 01121-744A5                      | N/A                                     |
| SWA6A-6  | E        | Texcan 04121-764A5                      | N/A                                     |
| SWA6A-8  | E        | Texcan 12701-08-014 or McMaster 7081K38 | N/A                                     |
| SWA10A-2 | 3        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA10A-3 | 3        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA10A-4 | 3        | EL 414 ARTIC 4/14                       | Texcan 01121-744A5                      |
| SWA10A-6 | 3        | EL 616 ARTIC                            | Texcan 04121-764A5                      |
| SWA10A-8 | 3        | Polar Wire 30806                        | Texcan 12701-08-014 or McMaster 7081K38 |
| SWA15A-2 | 1        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA15A-3 | 1        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SWA15A-4 | 1        | EL 414 ARTIC 4/14                       | Texcan 01121-744A5                      |
| SWA15A-6 | 1        | EL 616 ARTIC                            | Texcan 04121-764A5                      |
| SWA15A-8 | 1        | EL 816 ARTIC                            | Texcan 12701-08-014 or McMaster 7081K38 |
| SAW25A-2 | 1        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SAW25A-3 | 1        | 3/14 SJTOW                              | Texcan 01121-734A5 or 01004-08-047      |
| SAW25A-4 | 1        | EL 414 ARTIC 4/14                       | Texcan 01121-744A5                      |
| SAW25A-6 | 1        | EL 616 ARTIC                            | Texcan 04121-764A5                      |
| SAW25A-8 | 1        | EL 816 ARTIC                            | Texcan 12701-08-014 or McMaster 7081K38 |

Work Order 201323

Customer \_\_\_\_\_

Number of Wires 2Date 2019-10-4Serial Number S220667

| Number of Cycles | Load (Lbs.) | Action                                             | Pass/Fail |
|------------------|-------------|----------------------------------------------------|-----------|
| 1                | 3,000       | Check for Conductivity against all wires.          | - Pass    |
| 1                | 3,000       | Check all wires for grounding against swivel body. | - Pass    |
| 1                | 1,500       | Check for Conductivity against all wires.          | - Pass    |
| 1                | 1,500       | Check all wires for grounding against swivel body. | - Pass    |
| 1                | 750         | Check for Conductivity against all wires.          | - Pass    |
| 1                | 750         | Check all wires for grounding against swivel body. | - Pass    |
| 1                | 0           | Check for Conductivity against all wires.          | - Pass    |
| 1                | 0           | Check all wires for grounding against swivel body. | - Pass    |

Test Conducted By: Michel Lalonde  
TechnicianSignature: Sylvain Bouchard  
QC 5 Small FAB / QA



DQA: \_\_\_\_\_ Date: \_\_\_\_\_



# WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                |                                                                                                                                                                                |                                                  |                                               |                                                       |                                              |  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------|-------------------------------------------------------|----------------------------------------------|--|
| Work Order: <u>201323</u>      | <b>DISPOSITION</b><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b>                |                                               |                                                       |                                              |  |
| Part No. <u>SWA### Swivels</u> |                                                                                                                                                                                | Skid-tube Machining <input type="checkbox"/>     | Cross tube Small Fab <input type="checkbox"/> | Water Jet Prod. Eng. Coord. <input type="checkbox"/>  | Engineering Quality <input type="checkbox"/> |  |
| NCR No. _____                  |                                                                                                                                                                                | Thermoforming Large Fab <input type="checkbox"/> | Finishing Composite <input type="checkbox"/>  | Rec/Store/Packaging Supplier <input type="checkbox"/> | Other <input type="checkbox"/>               |  |
|                                |                                                                                                                                                                                |                                                  |                                               |                                                       |                                              |  |

|                         |               |                      |                                                       |
|-------------------------|---------------|----------------------|-------------------------------------------------------|
| Date: <u>2019/10/08</u> | Step #: _____ | QTY Effective: _____ | MRB (QSI042) Approval<br><i>M Lee</i><br>Feb 01, 2018 |
|-------------------------|---------------|----------------------|-------------------------------------------------------|

|                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                   |                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description Work Order Deviation</b><br>- Use a combination of heatshrink tubing and RTV Silicone to create a watertight seal around all electrical connections.<br>- Use a D2728-1 Placard in place of the laser engraved Dart logo | <b>Disposition</b><br>These deviations are acceptable to carry out on the following swivels:<br>- SWA3<br>- SWA6A<br>- SWA10A<br>- SWA15A<br>- SWA25A<br>- PSWA25A<br>- 4440-0280002 <i>M Lee</i><br>There is no impact on fit, form or function. | Completed By<br><u>A. PATRY</u><br>Lead hand / Supervisor Approval Verification<br>OCT 10 2019<br>QC / QA Coordinator Approval<br>68<br>OCT 10 2019 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| <b>Root Cause</b><br>Environment <input type="checkbox"/> No Re-verification <input type="checkbox"/><br>Design <input checked="" type="checkbox"/> Operator <input type="checkbox"/><br>Doc/Data <input type="checkbox"/> Offset/Setup <input type="checkbox"/><br>Equip/Tooling <input type="checkbox"/> Supplier <input type="checkbox"/><br>Handling/Pre <input type="checkbox"/> Training <input type="checkbox"/><br>Material <input type="checkbox"/> Use for Testing <input type="checkbox"/><br>Internal Transport <input type="checkbox"/> Poor Information <input type="checkbox"/><br>Tribal Knowledge <input type="checkbox"/> Rushing <input type="checkbox"/><br>LOA <input type="checkbox"/> Product Improvement <input checked="" type="checkbox"/><br>Substation <input type="checkbox"/> Process Improvement <input checked="" type="checkbox"/><br>Past Expiry Date <input type="checkbox"/> Manufacturing Process <input type="checkbox"/><br>Misidentified <input type="checkbox"/> Past Due <input type="checkbox"/> |  | <b>FAULT CATEGORY</b><br>Pressure/Forced Bending <input type="checkbox"/><br>Centre Not Concentric <input type="checkbox"/><br>Cracks <input type="checkbox"/><br>Crimp/Kink/Ripple/Wave <input type="checkbox"/><br>Cuffs <input type="checkbox"/><br>Crushing <input type="checkbox"/><br>Heat Treat <input type="checkbox"/><br>Wave/Twist in Tube <input type="checkbox"/><br>Marks/Chatter <input type="checkbox"/> |  |  |  | Temperature/Cure <input type="checkbox"/><br>Set-up <input type="checkbox"/><br>BOM/Route <input type="checkbox"/><br>Broken/Damage/Defect <input type="checkbox"/><br>Inspection Incomplete/Unqualified <input type="checkbox"/><br>Contamination <input type="checkbox"/><br>Countersink <input type="checkbox"/><br>Cut Too Short <input type="checkbox"/><br>Instructions Incomplete/Unclear <input type="checkbox"/><br>Drill Holes <input type="checkbox"/> |  |  |  | Power Loss/Surge <input type="checkbox"/><br>Follo/Program <input type="checkbox"/><br>Grain <input type="checkbox"/><br>Weld <input type="checkbox"/><br>Wrong Stock Pulled <input type="checkbox"/><br>Out of Sequence <input type="checkbox"/><br>Off-set <input type="checkbox"/><br>Mislabelled <input type="checkbox"/><br>Fit/Function <input type="checkbox"/><br>Misaligned/off center <input type="checkbox"/> |  |  |  | Positioned Wrong <input type="checkbox"/><br>Outside Dimensions <input type="checkbox"/><br>Over/Under tolerance <input type="checkbox"/><br>Part Incorrect <input type="checkbox"/><br>Part Lost/Missing <input type="checkbox"/><br>Part Moved <input type="checkbox"/><br>Drawing <input type="checkbox"/><br>Finish <input type="checkbox"/><br>Misread <input type="checkbox"/><br>Turning Sequence <input type="checkbox"/> |  |  |  |
| OTHER: _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |

Entered: 7K Date: Oct 23/19NCR No. 19-7502**WORK ORDER NON-CONFORMANCE / ROUTE UPDATE**Route update only ☐

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Job: <u>201323</u><br><br>Part No. <u>C series hooks and SWA Swivels</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/> | <b>DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/> </div> <div>           Eng. (Non-AW) <input checked="" type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Water Jet <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Quality <input type="checkbox"/> </div> </div>                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                                                             |
| Date : <u>2019/10/08</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Sequence #:                                                                                                                       | QTY Affected :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | MRB (QSI042)<br><br>May, 9 2019<br><i>M Lee</i><br><br>Completed By<br><u>A. PATRY</u><br><br>Lead hand / Supervisor<br>DAS 30 9-89<br>OCT 10 2019<br><br>QC / QA Coordinator<br>DAS 68 9-89<br>OCT 10 2019 |
| <b>Description Work Order Deviation</b><br><br>The electrical wires listed under "Acceptable Alternate Wire" on the attached sheet are acceptable to use in place of the "Drawing Specified Wire"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                   | <b>Disposition</b><br><br>This deviation is acceptable.<br><br>No change to fit form or function.<br><br>The job route must specify the wire that is called out on the drawing<br><br>The inventory P/N must reflect the same P/N that was received from a vendor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                             |
| <b>Root Cause</b><br><br><div style="display: flex;"> <div style="flex: 1;">           Operator <input type="checkbox"/><br/>           Manufacturing Process <input type="checkbox"/><br/>           Equip/Tooling <input type="checkbox"/><br/>           Handling/Preservation <input type="checkbox"/><br/>           Material <input type="checkbox"/><br/>           Product Improvement <input checked="" type="checkbox"/><br/>           Process Improvement <input type="checkbox"/><br/>           Human Factors <input type="checkbox"/> </div> <div style="flex: 1;"> <input type="checkbox"/> Pressure/Forced<br/> <input type="checkbox"/> Bending<br/> <input type="checkbox"/> Crushing<br/> <input type="checkbox"/> Cracks<br/> <input type="checkbox"/> Crimp/Kink/Ripple/Wave/Twist<br/> <input type="checkbox"/> Marks/Chatter<br/> <input type="checkbox"/> Mislabeled         </div> </div> |                                                                                                                                   | <b>FAULT CATEGORY</b><br><br><div style="display: flex;"> <div style="flex: 1;"> <input type="checkbox"/> Contamination<br/> <input type="checkbox"/> Misaligned/off center<br/> <input type="checkbox"/> BOM/Route<br/> <input type="checkbox"/> Broken/Damage/Defect<br/> <input type="checkbox"/> Incomplete/Unclear Instructions<br/> <input type="checkbox"/> Drill Holes<br/> <input type="checkbox"/> Fit/Function         </div> <div style="flex: 1;"> <input type="checkbox"/> Power Loss/Surge<br/> <input type="checkbox"/> Folio/Program<br/> <input type="checkbox"/> Grain Direction<br/> <input type="checkbox"/> Weld<br/> <input type="checkbox"/> Wrong Stock Pulled<br/> <input type="checkbox"/> Out of Sequence<br/> <input type="checkbox"/> Off-set/Set-up         </div> <div style="flex: 1;"> <input type="checkbox"/> Positioned Wrong<br/> <input type="checkbox"/> Outside Tolerance<br/> <input checked="" type="checkbox"/> Drawing<br/> <input type="checkbox"/> Finish<br/> <input type="checkbox"/> Part Lost/Missing<br/> <input type="checkbox"/> Misread         </div> </div> |  |                                                                                                                                                                                                             |
| Other/Details:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                                                             |